

Aviation Weather Testbed Overview

Dr. Steve Lack,
Techniques Development Meteorologist
AWC

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AWC Vision

To be the trusted authority and leading innovator for aviation weather information.

AWC Mission

The AWC delivers consistent, timely and accurate weather information for the world airspace system. We are a team of highly skilled people dedicated to working with customers and partners to enhance safe and efficient flight

AWT Staff Changes



David Bright left AWC in late March to go back home to Portland to be the MIC.

New Contacts:

Bruce Entwistle: Acting Aviation Support Branch Chief/SOO- AWT Manager

Steve Lack: AWT Experiment Manager

Amanda Terborg: AWT GOES-R R&D

Review of 2014

- AWC was short-staffed much of 2014 with retirements and slow hiring
- Key Developments
 - CDM Convective Forecast Planning Guidance (Automated CCFP)
 - Collaborative Aviation Weather Statement (NAWIPS software and training creation)
 - 1-week Summer Experiment (Ceiling and Visibility and CAWS focus)
 - Start of Ceiling and Visibility Improvement Project



Aviation Weather Center



AWT Summer Experiment 2014

Welcomes



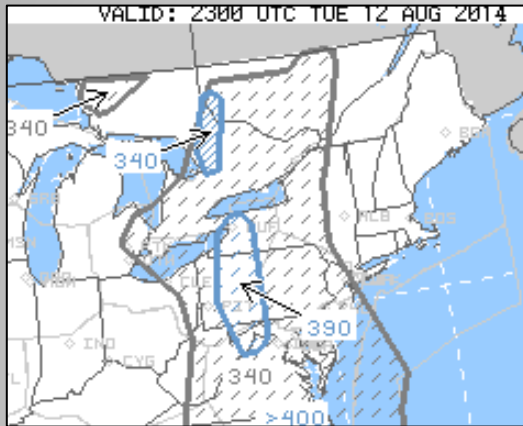
2014 Summer Experiment

- Due to staff shortage limited to one week
- Large turnout of external participants
 - STI funded a few external guests from AAWU, CWSUs, and WFOs
 - FAA Weather Evaluation Team quarterly meeting coincided
 - CAWS testing and development
- Two major efforts
 - 1) Ceiling and Visibility Improvements (NTSB Most Wanted List)
 - 2) Collaborative Aviation Weather Statement Testing and Evaluation
- Improved partnerships across the aviation weather enterprise
 - NWS, OAR, NCAR, MIT LL, FAA

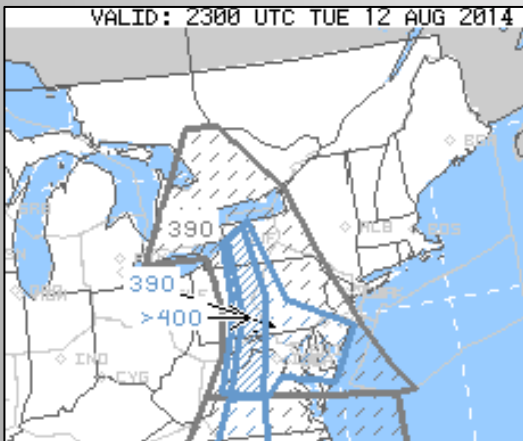
Collaborative Aviation Weather Statement (CAWS)

- New AWC product: Launched Operational Demonstration on 3 March 2015
 - Event-driven based on air traffic impact due to convection (similar to MCD) → True Decision Support
 - Complement Routinely Issued Convective Guidance (CCFP)
- Collaboration between FAA WET and AWC since 2013
 - Limited demonstration summer of 2013 and Summer Experiment 2013
- Full capability demonstration Summer Experiment 2014
 - Scope requirements
 - Test collaboration (see tomorrow's talk)
- 2 CAWS training seminars/webinars in early 2015
 - Week long events with stakeholders and meteorologists

CAWS and New CCFP



Automated CCFP



Forecaster Produced CCFP

Aviation Weather Statement 0003
NWS Aviation Weather Center Kansas City MO
1925 UTC Tue 12 Aug 2014

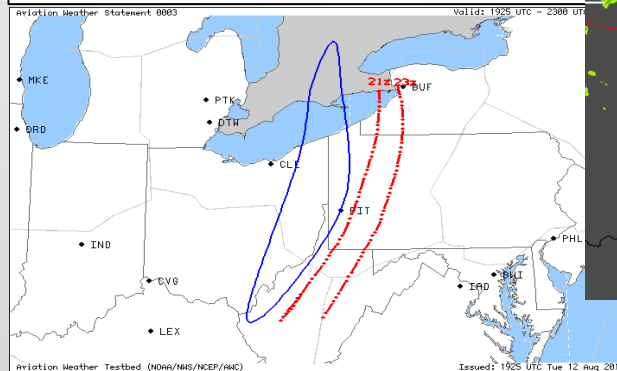
Valid Period...1925 UTC - 2300 UTC 12 Aug

AWS for Convection...

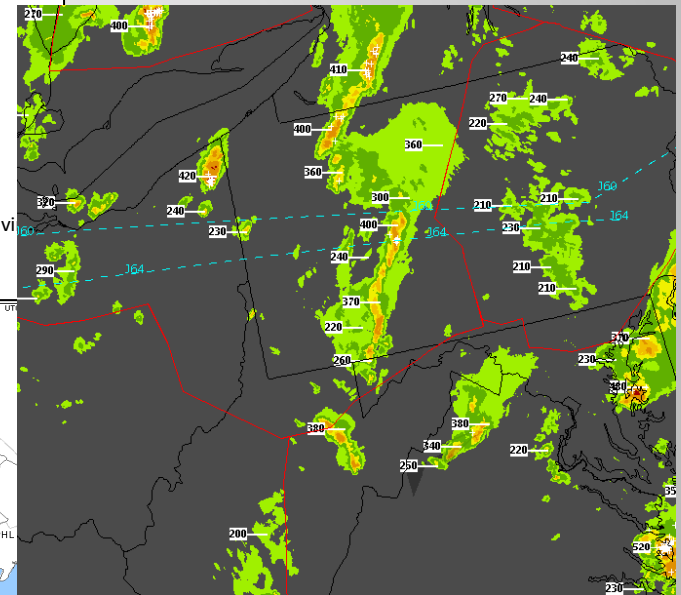
NAS Elements Affected...
ARTCCs...ZDC ZID ZOB

Constraints...

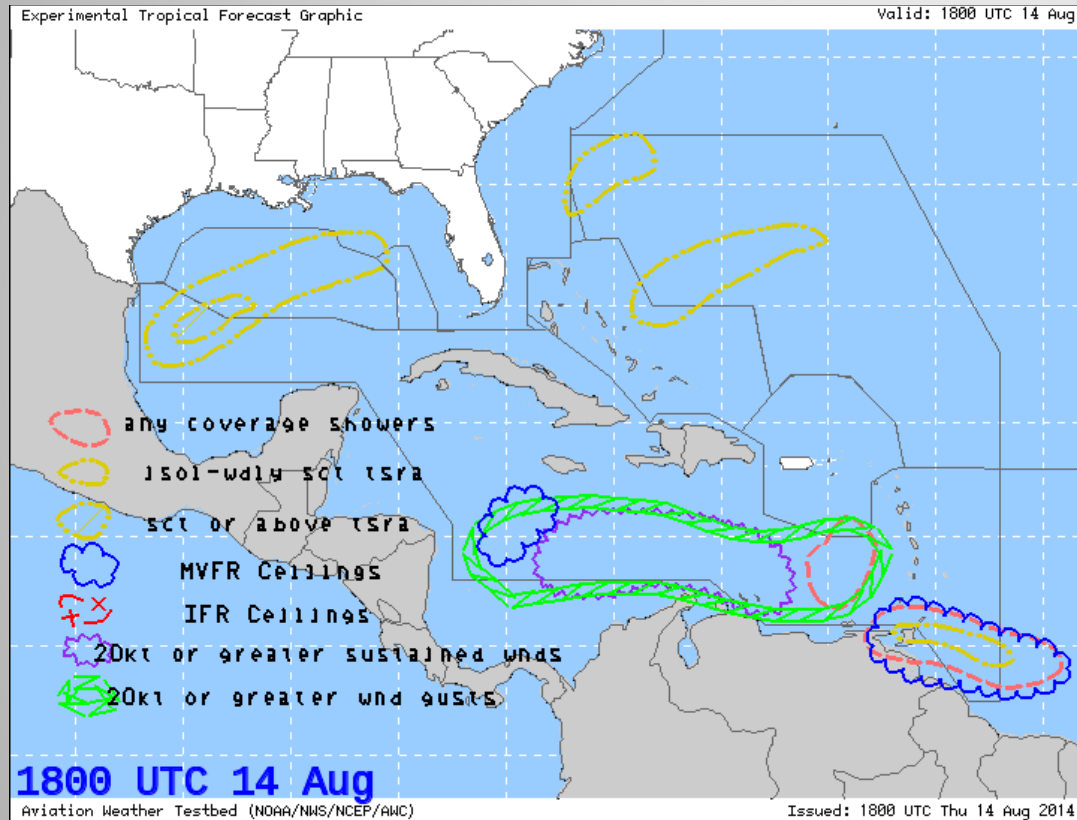
A broken line of convection with tops FL300-450 continues moving through OH/PA. Some impacts to jet routes: J64, J60, J80. Convective threat will likely continue past 23z.



Experimental CAWS-
adding more detailed
timing and structure with
an operational focus

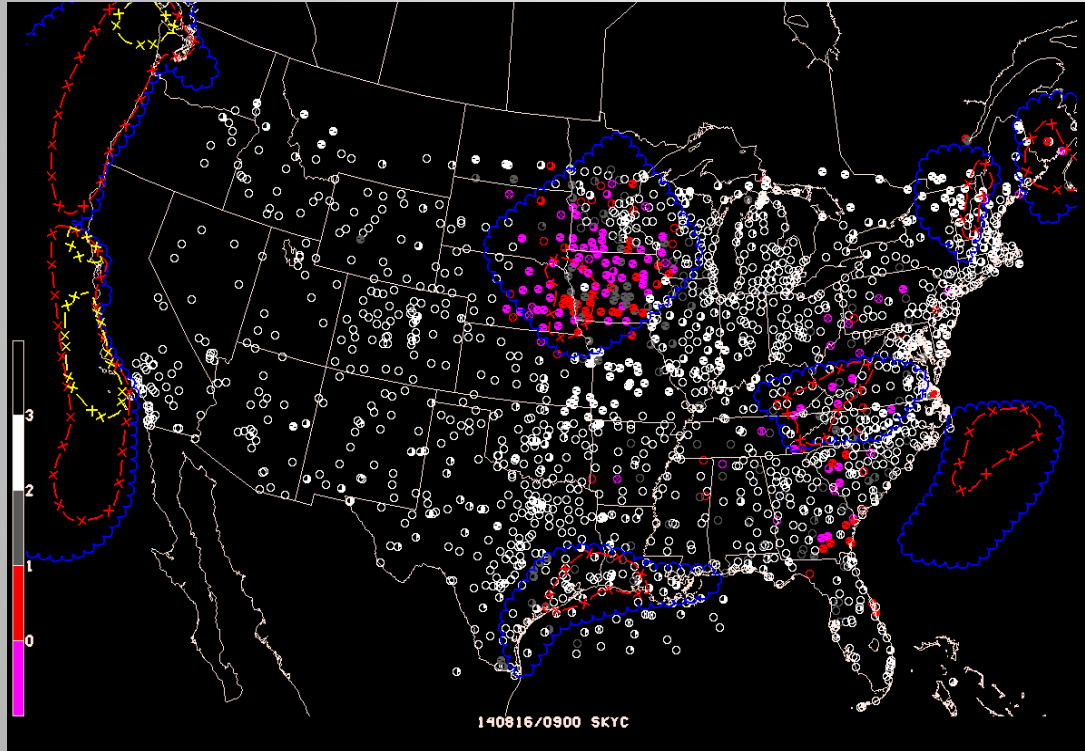


Gulf/Caribbean Graphics



- Test a Graphical Representation of 24-h Area Forecasts (FAGX, FACA) in a difficult region to forecast
 - Examine North American Domain models (32-km)
 - Examine experimental toolsets (NCAR EPOCH)

Ceiling and Visibility Improvement



Highlighted the problems of long lead-time for impactful C&V and resolution problems for distinguishing LIFR and IFR.

- Evaluated model guidance with the model developers in the production of graphical flight rule plots (LIFR, IFR, MVFR) out to 24-h
 - MDL, EMC, GSD all present
 - NTSB Most Wanted-GA has a lot of fatalities related to low C&V

Ceiling and Visibility 3-year plan

- FAA Aviation Weather Research Program (AWRP) funded project
- Phase 1: Increase relationships between modeling community and AWC for C&V improvement
 - Monthly meetings with EMC, enhanced communications with MDL
- Phase 2: Create National C&V guidance as a start towards a common operating picture (Summer Experiment 2015 and beyond)
- Phase 3: Provide Downscaled National C&V grids to select WFOs for assimilation.
 - The WFOs edit the grids and pass it back up to AWC for final common operating picture for C&V.
 - Formal Evaluation and Human Factors Studies Commence

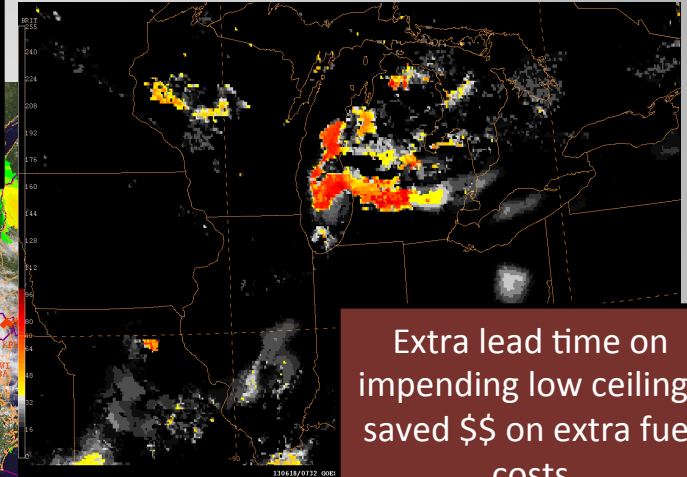
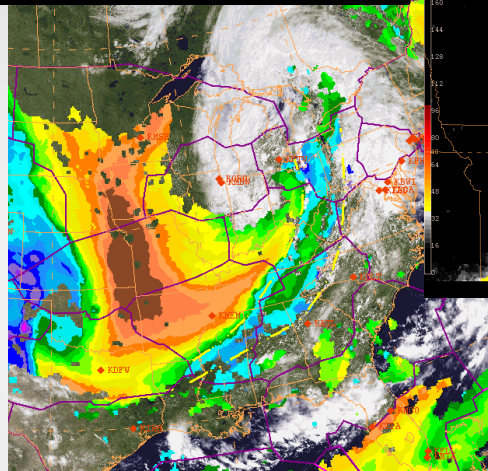
AWDE Collaboration

- FAA Aviation Weather Demonstration and Evaluation (AWDE) collaboration with AWC Testbed activities
 - Provide support by examining how new products and services are interpreted by the aviation user.
 - Can provide an environment for controlled simulations of new products
 - Potentially hold coinciding experiments at the AWT and FAA Technical Center for end-to-end evaluations of new concepts
 - Place meteorologists, human factor researchers and end-users at both locations

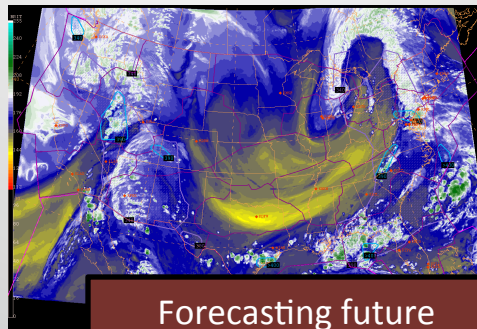
GOES-R: continuing impact

- Fog and Low Stratus
 - Used regularly by the NAMs at the FAA Command Center
- NearCast Model
 - Used by the CAWS desk for convective activity
 - Used in conjunction with GeoColor imagery
- Dust enhancement
 - Used by FA forecasters for blowing dust SIGMETs
- WRF Simulated imagery
 - Used by CWSUs and others to determine future location/coverage of convective activity
 - Used to determine model performance

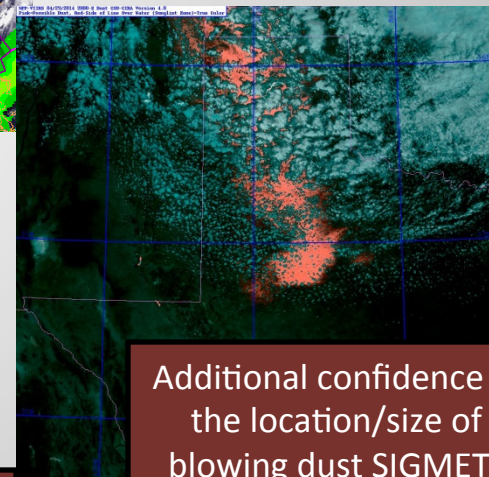
Decision support for the type, intensity, and longevity of expected convective activity



Extra lead time on impending low ceilings saved \$\$ on extra fuel costs

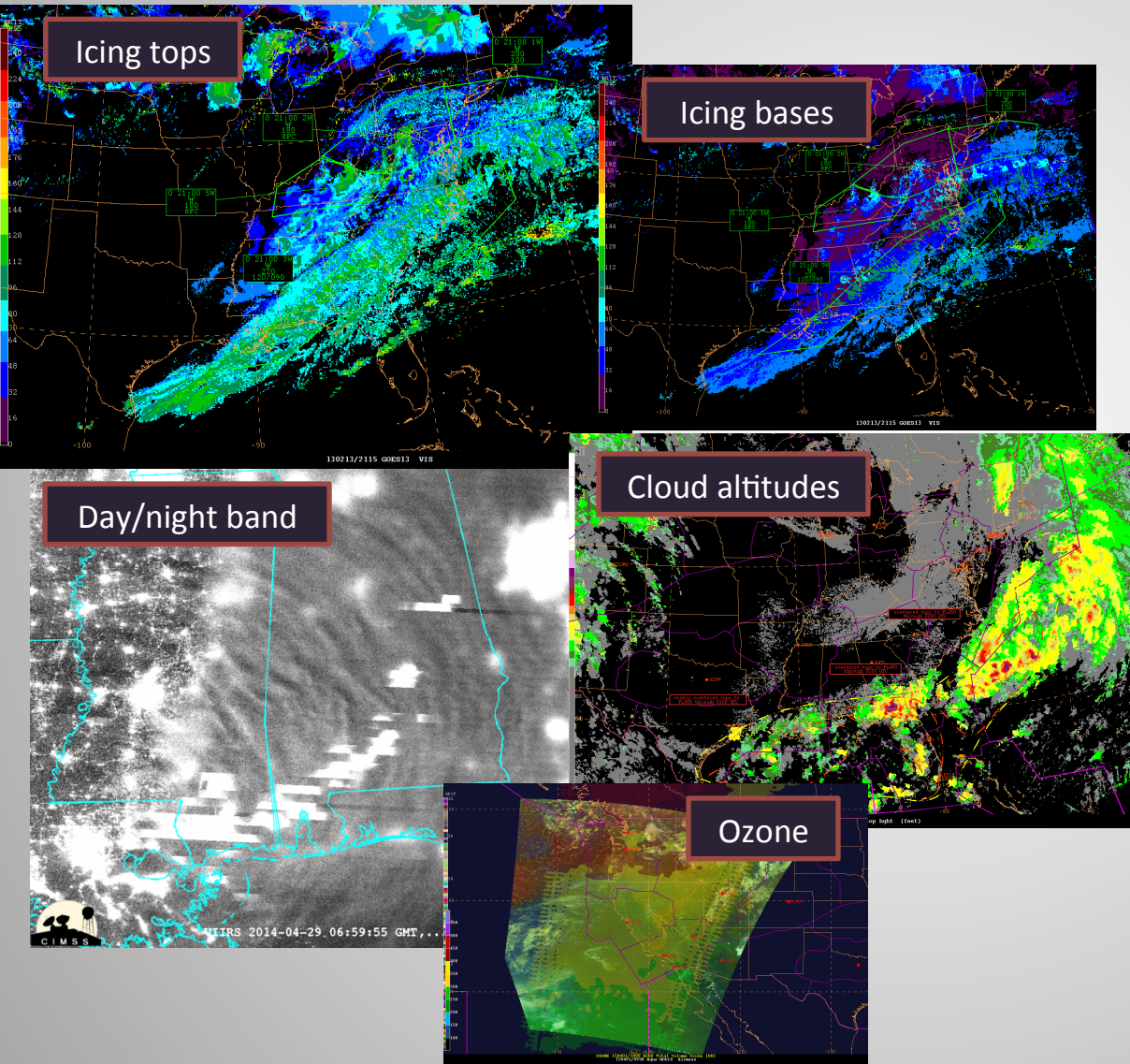


Forecasting future location/coverage of convective activity



Additional confidence in the location/size of blowing dust SIGMETs

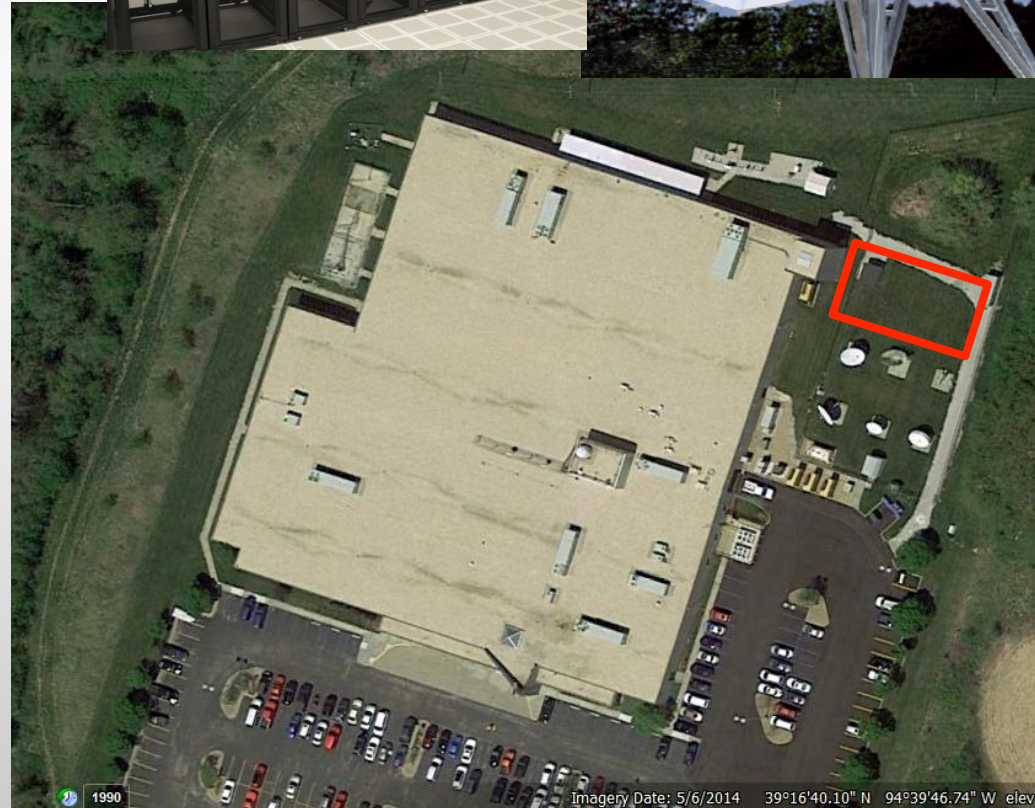
GOES-R: new concepts



- Icing bases and tops
 - For G-AIRMET icing snaps
- Day/night band
 - Nightglow waves and their association to CAT
- Cloud altitudes
 - C&V forecasting
 - Convective cloud tops
- Ozone and RGB Airmass
 - Identification of layers with high ozone levels
 - Also potentially used to identify stratospheric intrusions that may be associated with trop folds and turbulence

GOES Rebroadcast (GRB)

- AWC to receive three new GRB antenna systems
 - Site survey took place in mid-March with Harris
 - Currently awaiting survey review from GRB/Harris
 - Civil work to begin mid-summer (~July 2015)
 - Installation completion goal of December 2015
- These systems will send GOES-R/S/T data to the N-AWIPS and AWIPS-2 systems in AWC operations



2015 Summer Testbed

- Similar to 2014
- Expand on Ceiling and Visibility Plan
 - Move to testing meteorologist-over-the-loop for probabilistic ceiling and visibility guidance for the CONUS (Leverage GFE)
 - Increase collaboration with modeling community
- CAWS refinements
 - Assimilate mid-season evaluation findings into future Convective CAWS enhancements
 - Determine additional best practices between CWSU, airlines and AWC meteorologists

Future Winter Testbed

- Focus on Icing and Turbulence
- Evaluate the use of enhanced GAIRMETs
 - Include low, medium, high risk of encountering ‘Moderate or Greater’ events
 - Examine experimental probabilistic guidance for these variables
 - Increase collaboration with CWSUs on these phenomenon
 - Already started an icing blog for significant icing event discussion on best practices, etc
 - Provide guidance on an experimental webpage